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Claims

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A strontium silicate-based phosphor expressed by the following chemical formula 1:

 $Sr_{3-x}SiO_5:Eu^{2+}_{x}$ ----Chemical formula 1 where x is $0.001 < x \le 1$.

- A method of fabricating a strontium silicatebased phosphor, the method comprising the steps of:
- forming a mixture where strontium carbonate (SrCO3), 10 silica (SiO₂), and europium oxide (Eu₂O₃) are mixed; drying the mixture; and

performing a heat treatment of the dried mixture in a reducing atmosphere to form $Sr_{3-x}SiO_5:Eu^{2+}_{x}$

- 15 where x is $0 < x \le 1$.
 - The method of claim 2, wherein the step of 3. forming the mixture comprising the steps of:

weighing the respective components of the mixture; and mixing the respective components with a solvent to form 20 the mixture.

- The method of claim 2, wherein the drying step is performed at a temperature range of 100 - 150 °C.
- The method of claim 2, wherein the drying step is 5. performed for a time range of 1 - 24 hours.
- б. The method of claim 2, wherein the drying step is 30 performed at a temperature range of 100 - 150 °C for a time range of 1 - 24 hours.
 - The method of claim 2, wherein the drying step is 7. performed using an oven.
 - The method of claim 2, wherein the heat treatment

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is performed at a temperature range of 800 - 1500 °C.

- 9. The method of claim 2, wherein the heat treatment is performed for a time range of $1-48\ \mathrm{hours}$.
- 10. The method of claim 2, wherein the heat treatment is performed at a temperature range of 800 1500 $^{\circ}\text{C}$ for a time range of 1 48 hours.
- 11. The method of claim 2, wherein the drying step is performed at a temperature range of 110 130 °C for a time range of 8 12 hours, and the heat treatment is performed at a temperature range of 1200 1400 °C for a time range of 2 5 hours.
- 12. The method of claim 2, wherein the reducing atmosphere of the heat treatment is made by a hydrogen-mixed gas.
- 20 13. The method of claim 2, wherein the heat treatment uses a nitrogen gas containing 2 25% by weight of hydrogen gas so as to make the reducing atmosphere.
 - 14. An LED comprising:
- 25 an LED chip; and
 - a strontium silicate-based phosphor, which is excited by a light emitted from the LED chip and expressed by the following chemical formula 1:

 $Sr_{3-x}SiO_5:Eu^{2+}_{x}$ ---Chemical formula 1

- 30 where x is $0 < x \le 1$.
 - 15. The LED of claim 14, wherein the light excited by the phosphor has a wavelength band of 500 700 nm.
- 35 l6. The LED of claim 14, wherein the LED chip is placed on a reflection cup by which the emitted light is

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reflected.

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- 17. The LED of claim 14, wherein the LED chip for exciting the phosphor is a blue LED chip.
- 18. The LED of claim 14, wherein the LED chip and the phosphor are molded by a transparent resin.
- 19. The LED of claim 14, wherein the phosphor is excited by the LED chip and emits a yellow light.
 - 20. The LED of claim 14, emitting a white light.